

REPORT OF THE COMMITTEE ON
HEREDITARY BLINDNESS

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their usual activity failed to obtain results. Several hours of complete rest were found necessary, immediately after the treatment, and, when these directions were followed, reduction of the blood pressure invariably resulted. The results were particularly gratifying when treatments were given in the afternoon and were followed by bed rest until the next morning. Owing to lack of hospital equipment, some of my most interesting cases were not treated by diathermy. For this reason, I have had no experience in the treatment of pneumonia. Three cases of asthmatic bronchitis were treated, with improvement. I believe diathermy almost a specific for lumbago and like conditions, and I know of no treatment that will relieve the distress occasioned by congested protruding hemorrhoids so quickly and completely as a single application of diathermy. With the exception of finding and removing infection in the treatment of chronic arthritis, it is my opinion that diathermy holds a place second to none. Its use is of decided value preceding passive or active motion of the stiff and painful joint.

Special Article

REPORT OF THE COMMITTEE ON HEREDITARY BLINDNESS*

It seems proper that this committee should report as to its efforts during the last three years for the control of hereditary blindness, especially as it becomes desirable now to obtain more exact estimates than before of the real number thus afflicted, and their cost. To do that it is necessary to recall a few familiar facts and then show why and how this question of cost can be determined.

1. Clinical records show that at least thirty-four defects of the eye, including the lids and muscles, have been found to be distinctly hereditary.

Of these, at least eight are apt to produce practical blindness—either directly or indirectly. The principal defects in this group are corneal degeneration, persistent pupillary membrane, certain forms of cataract, glaucoma, retinitis pigmentosa, macular degeneration, optic atrophy, retrolental neuritis, blindness with idiocy, buphthalmos and microphthalmia.

2. In our report in 1921, reasons were given for estimating that we have now in the United States from about 5,000 to 7,500 blind from hereditary defects, and that their cost probably exceeds \$2,000,000 annually. The number is certainly not decreasing, and thus far no special attempt has been made to limit their continued propagation. The methods usually suggested for the control of hereditary blindness are also familiar and need only be mentioned. They are:

(a) Education of the public so that the existence of such a defect or a marked tendency to it may be sufficient cause to prevent marriage. Theoretically that is good, but practically good for nothing. Love is proverbially blind, and young people in that condition will marry in spite of obstacles, no matter how great.

(b) Isolation of hereditary defectives must also be dismissed as impracticable.

(c) Probably the most effective method is some one of the various operations for sterilization; but as yet they lack the support of public opinion, and must fight their way into legislative approval.

(d) Another suggestion concerns the education of the medical profession, ophthalmologists especially, in order that we may learn the ultimate reasons for the inheritance of a given defect by one member of a family and not by another. While that is also a consummation devoutly to be wished, it is probably far, far off. Of course, much could be learned by a study of the hundreds of family histories already published and plotted. Material for many investigations could be obtained by referring to the Bibliography of Hereditary Eye Defects, collected by the chairman of this committee, and

published by the Eugenics Record Office of the Carnegie Institution of Washington, in their Bulletin 21.

We cannot, however, wait for some possible discovery in the distant future. Ophthalmologists, especially members of this section, should at least begin something, and begin it now.

3. In a previous report of this committee, it was shown that the most practical way of attacking this problem was by what may be called the economic route.

Legislators and the public generally are apt to react most promptly when the pocket nerve is touched. Accordingly, in our report made in 1921 we recommended the adoption of some form of legislation for the relief of taxpayers from the cost of supporting children born of parents either of whom is a carrier of inheritable blindness. Briefly stated, that proposed law provided that if it appeared that a person having inherited blindness was about to marry, then any taxpayer might appeal to the county judge for a commission of two or more experts who would examine and report to the judge as to the probable danger that any children from that union might become blind and therefore public charges. And if, in the opinion of such experts, such danger of blindness did exist, then the parties to the proposed marriage would be obliged to give bonds for amounts sufficient for the support of a child during the years of an average life.

This general plan seemed at first such a real step in advance that it was endorsed by this section, and later approved in correspondence by a long list of distinguished geneticists, physicians and others.¹ Indeed, the simple presentation in one state of the bill embodying these conditions drew forth a discussion of eugenics that proved more instructive than volumes of propaganda. Still the bill, as then proposed, was far from perfect. Constitutional and procedural objections arose, so difficult to overcome that the legal aspects of such a law are still under consideration. It is probable that a satisfactory form can be agreed on and the measure can again be presented for action.

4. One great objection up to the present time is that the cost of hereditary blindness has not been studied sufficiently to warrant statistical statements concerning it. Therefore, the point that this committee wishes to emphasize is the duty of ophthalmologists to ascertain, in as many instances as possible, not only the proportion of the hereditary blind to other varieties but also what has been the cost of given families to given communities.

The term "cost" in this connection means the amount expended either by the parents of a child or by the city or county for him. If the parents pay for the child while an inmate of a state school for the blind, then the board, tuition, guidance, and care at school and during vacations are private charges. Nevertheless, they are part of the cost of the blindness and should be counted as such. If a child is kept at home, the same items should be charged to the cost if they exceed the average expended for a normal child of the same social grade. When the parents cannot pay part or all of the support of the blind child, that cost, of course, is assessed on the taxpayer.

Then, when the limit of school age is reached, not only must an adult, if unable to support himself, be supported, but, by his idleness, he becomes a direct loss to the community—a loss that economists have calculated quite exactly—though it varies in different localities.

6. The next question is, How can these or similar data be obtained? For that, we naturally turn first to state schools for the blind.

1. The following are a few of those who have also endorsed the principle involved in the legislation here referred to, with the positions then held by them: M. P. Ravenel, M.D., president, American Public Health Association, Columbia, Mo.; William M. Sweet, M.D., president, American Ophthalmological Society, Philadelphia; Adolf Meyer, M.D., president, American Neurological Association, Baltimore; A. M. Barrett, M.D., president, American Psychiatric Association, Ann Arbor, Mich.; W. A. White, M.D., president, American Psychopathological Association, Washington, D. C.; G. Kirby Collier, M.D., president, National Association for Study of Epilepsy, Rochester, N. Y.; Milton J. Rosenau, M.D., professor of preventive medicine and hygiene, Medical School of Harvard University, Brookline, Mass.; William Burt, bishop of western New York, Buffalo; Harry Olson, chief judge, municipal court, Chicago; W. W. Campbell, lawyer, state senator, Lockport, N. Y.; James F. Rooney, M.D., president, Medical Society of the State of New York, Albany, N. Y.; Leonard W. H. Gibbs, lawyer, state senator, chairman, Committee on Public Health of New York, Buffalo.

* Read before the Section on Ophthalmology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

The blood pressure was low, the average being 98 systolic and 66 diastolic. There was exquisite tenderness of the left chest wall, at its maximum in the third space at the anterior axillary line. Diathermy was given at once, and daily for the succeeding week, with marked improvement. In the meantime the dentist reported three abscessed teeth, which were removed. In two weeks the patient was free from all pain.

Four months later he returned, complaining of neuralgia of the upper jaw and a mild recurrence of the chest pains. A roentgenogram showed two abscessed teeth and several that were suspicious. After consultation with the dentist, it was thought advisable to remove all the upper teeth. These were extracted, and on my suggestion nothing was recommended for the chest pains but the use of a hot water bag at night. Six weeks later the patient insisted on other treatment, and diathermy was used every other day for two weeks, which permanently relieved his distress.

CASE 5.—G., a man, aged 56, complained of constant soreness in the left chest and attacks of severe pain extending down the arm. This started nine weeks before, and had rapidly grown worse. He had been treated for angina by his physician without success, and was referred to me. The heart was enlarged, and the aortic second sound accentuated. The blood pressures were 165 systolic and 104 diastolic; the pulse was 68 and irregular. There was marked sensitiveness on pressure in the third and fourth interspaces. The cardiogram showed left ventricular predominance and premature beats. No foci of infection were found. Intercostal neuralgia was diagnosed, and the patient's physician was advised to try further rest and to apply radiant heat to the painful area. A week of this gave but little improvement, and he was returned to me for diathermy. Five daily treatments completely relieved the patient, and there has been no recurrence.

In Cases 4 and 5, there are lacking two symptoms that have been the predominating complaints in all my cases of organic angina pectoris; namely, attacks characterized by substernal pain associated with fear of death. My experience has taught me to regard with skepticism complaints of pain and soreness to the left of the sternum as indicating true angina pectoris, whether or not there is evidence of organic cardiac disease. Mackenzie, in his various discussions of angina, rarely mentions substernal pain or distress, while Allbutt, on the contrary, stresses this feature. According to the former's point of view, that the distress of angina is evoked by a diseased heart reflexly stimulating certain areas in the central nervous system, it seems entirely possible that pain to the left of the sternum may occur in connection with organic heart disease. Nevertheless, I am a convert to Allbutt's view of Heberden's angina, believing that it is a true aortic and not a cardiac pain and is mostly substernal. Pains to the left of the sternum are, in my experience, commonly associated with focal infection. Definite intercostal neuralgia and myalgia are frequently encountered both with and without a discoverable source of infection. If complete relief is not obtained from diathermy, a source of infection must be located elsewhere in the body and removed.

CONCLUSIONS

The results obtained from 1,470 applications of diathermy to sixty-one patients suffering from various conditions common in internal medicine, justify the following conclusions:

1. Diathermy is of value for the reduction of arterial hypertension, but sedative baths under carefully prescribed conditions are equally helpful.

2. Diathermy has given symptomatic relief in many painful conditions more promptly than I have obtained under usual treatment, and it is an addition to our other therapeutic resources.

3. It is recommended that diathermy be studied in hospitals and large clinics to define its scope, indications and limitations.

35 Chestnut Street.

ABSTRACT OF DISCUSSION

DR. ELNORA C. FOLKMAR, Washington, D. C.: I have used diathermy as a medical therapeutic agent in various conditions. It is the best means for producing heat within the tissues. Diathermy was first used as a therapeutic agent in the treatment of joint conditions in 1896. Those who employed diathermy in the war hospitals found that it excelled all other means of restoring stiff joints to normal function. It was also found to be particularly valuable in cases of nonunion of fractures. The next field of therapy in which diathermy received recognition was in the treatment of chronic conditions, especially those of the circulatory system. Before treating a case of hypertension with diathermy, one must consider the cause. If it be compensatory, no attempt should be made to reduce it, but the treatment should be directed to the renal, hepatic, cardiac, or other cause, of which it is a compensation. In all cases of simple hypertension, general diathermy, applied as autocondensation, will reduce the pressure. Autocondensation increases both oxidation and elimination. In the treatment of angina or myocarditis, diathermy should be applied locally. A large, indifferent electrode is placed on the back and a smaller one over the heart. A current of from 300 to 800 milliamperes is passed for twenty minutes. This has a soothing effect on the nerves, dilates the coronary and other vessels of the heart and thus actually affords relief, no matter what may be the cause of the angina. The relief from a single treatment sometimes inhibits another attack for months. Nagelschmidt says that if local diathermy applied through the heart does not give prompt relief in angina, an aneurysm or a grave myocarditis may be suspected. It is easy to understand why diathermy gives relief in neuritis, neuralgia and other painful conditions, such as lumbago. The latter yields like magic to local diathermy followed by rhythmic faradic massage.

DR. ALFRED FRIEDLANDER, Cincinnati: My experience with diathermy is in accord with some of the findings of Dr. Jackson. As a temporary expedient in cases of hypertension, it is of value. I cannot say, however, that it acts in other ways than as a vasodilator. We should be exceedingly cautious in ascribing to it values it does not possess. I have not gotten better results with diathermy in heart cases than with any other method. In the relief of angina, the results have not been as satisfactory as could have been hoped. The relief of pain in other conditions that have been referred to has been very marked. Last winter, a series of cases of pneumonia was treated by regular applications of diathermy. The results were not as encouraging as have just been reported. We have here a therapeutic agent of value, but its limitations must be borne in mind, and it seems to me that claiming for it virtues it does not possess, may bring a very valuable agent into disrepute.

DR. A. A. WITHAM, Portland, Ore.: From all quarters there is coming testimony that diathermy is doing good work—that the D'Arsonval current is of therapeutic value; that indirect high frequency and direct high frequency all have their place. For the last year, I have been using these to a limited extent and have become very enthusiastic over their use in some forms of precordial pain, anginal in character, which are always hard to take care of. We are having good results. What the public is asking us for is relief. We have put our patients through a course of slow diagnostic stunts, and they have become impatient and wandered away seeking relief. Why not try to understand these things? One of the chief duties of the physician is to relieve, and if we can give relief, no matter by what means, we have done our work. For my part, I want to know more about these things, and I am going to try them.

DR. EDWARD W. JACKSON, Rochester, N. Y.: In regard to the reduction of hypertension by diathermy, patients who came to the office for treatment and were then permitted to resume

The superintendents and other officials of such institutions are usually alive to the importance of the subject and ready to give all the information desired as to pupils and other known afflicted relatives, provided, of course, that no names or other means of identification are published.

When ophthalmologists have not the time or opportunity to obtain these data, valuable assistance can often be obtained from students of economics or of eugenics in some neighboring university.

The collection of such data seems at first glance almost unworthy of the attention of busy practitioners. But the economic reason for the prevention of hereditary blindness proves now to be quite as important to the legislators as was the economic reason for the prevention of ophthalmia neonatorum when presented first to them by the chairman of this committee nearly half a century ago. That struggle was continued through years of indifference by a large part of the profession and of the public. But when ophthalmologists at last demonstrated to legislators how much it cost to support those needlessly blind, then, and not till then, was philanthropy reinforced by self-interest, and the legislative victory over ophthalmia spread from state to state. So do we hope it may be now.

In view of this, the committee would recommend that:

1. Ophthalmologists and other medical men, especially those connected with schools for the blind, interest themselves, either personally or by proxy, in a study of the number and cost of those whose defect is hereditary and as far as possible of their relatives similarly affected.

2. Teachers of economics and eugenics should be requested and assisted to conduct investigations along these lines.

3. Copies of such data, wherever obtained, whether published or in manuscript form, be sent to the Eugenics Record Office of the Carnegie Institution, Cold Spring Harbor, N. Y., or to the chairman of this committee.

4. All medical men be urged to join, wherever possible, in this crusade against the propagation of hereditary defects, particularly hereditary blindness, especially when an opportunity is offered to reach legislators, lawyers, clergymen or other teachers. In that way we may confidently hope to effect a gradual lessening of the suffering, sorrow, needless expense and blindness in this and in every other nation.

LUCIEN HOWE,
HARRY H. LAUGHLIN.

WILLIAM T. BELFIELD,

Clinical Notes, Suggestions, and New Instruments

PARALYSIS OF THE LEG FOLLOWING ILLUMINATING GAS POISONING*

J. J. KURLANDER, M.D., CLEVELAND

Junior Assistant Orthopedic Surgeon, Mount Sinai Hospital

A white man, aged 27, while residing in Detroit, went to his room at 9 p. m., Jan. 10, 1924, and retired about an hour later. A small gas heater without a chimney connection was left burning. The patient knew nothing further until January 13, when he awoke and found himself in a hospital. At this time his mind was clear, and he experienced no pain, but he felt weak. A few days later, he called his physician's attention to the fact that he had an anesthesia and paralysis of the right leg and foot. About this time a sore spot was noticed over the right tuberosity of the ischium. This area became larger and more indurated and painful. The patient was in a hospital for six weeks, during which time he lost 30 pounds (13.6 kg.).

When examined at Mount Sinai Hospital, Cleveland, February 27, there was marked emaciation, and the general appearance was that of advanced malignancy. There was a large, painful, indurated mass, the size of a coconut, over the right tuberosity of the ischium, which was semifluctuating. There was a complete flaccid paralysis of the foot and leg,

with characteristic toe-drop and complete anesthesia corresponding to the distribution of the peroneal nerve. The tips of the great and second toes were gangrenous.

Because of the loss of weight in six weeks and the cachectic appearance, the tumor mass in the right buttock was thought to be malignant, especially since we had previously seen a large, semifluctuating tumor mass in the same region presenting the same appearance and characteristics, which proved to be a sarcoma. Examination of the blood showed: leukocytes, 12,000; hemoglobin, 70 per cent.

February 28, Dr. C. H. Heyman made an incision into the tumor and aspirated several ounces of pus which on culture contained *Staphylococcus pyogenes-aureus* and hemolytic streptococci. The wound was irrigated with surgical solution of the chlorinated soda, and subsequently healed completely.

The gangrenous areas on the toes healed slowly. The patient was given a right-angled splint to prevent toe-drop, and physiotherapy daily.

May 20, the degree of paralysis had not progressed or retrogressed, but the area of anesthesia seemed to extend over a slightly lesser area. The patient had made a very satisfactory and progressive increase in weight.

The pathologic changes that occur in illuminating gas poisoning may be thus summarized:

The blood and viscera are a cherry red. There are marked degenerative changes in the muscles and, in most instances, small, scattered hemorrhages, and intense hyperemia of the organs. Marked cerebral changes occur. Peripheral neuritis and less common poliomyelitis and disseminated encephalomyelitis have been seen. The most important nerve lesions, however, are in the brain, particularly small, scattered hemorrhages with paralysis, which may be monoplegic or hemiplegic. This paralysis of cerebral origin is apt to be permanent.

In view of the fact that the anesthesia in the case here reported seems to have subsided in extent, we are hopeful that recovery, even though not complete, may ensue.

630 Osborn Building.

REPETITION OF MISSED LABOR

CHARLES W. SAWERS, M.D., WATFORD, ONTARIO

REPORT OF CASE

Mrs. W. B., aged 32, had given birth to two healthy children. Sometime after her period of July 7, 1916, she became pregnant. She noticed that after the fifth month she did not get any stouter. Nov. 6, 1917, a dead fetus was born. It was now seven months past full term.

Nov. 1, 1918, a normal child was born, and still lives. After nursing the child, menstruation became regular till sometime after her period of April 3, 1922, when she again became pregnant. All went as usual for about five months, when she noticed that the increase in size had ceased. Dec. 17, 1923, she gave birth to another dead fetus—eleven months after full term.

In both cases the child died when about five months in utero, and the mother made an uneventful recovery.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

BUTYN (See New and Nonofficial Remedies, 1924, p. 32).

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* From the Orthopedic Department, Mount Sinai Hospital.

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SATURDAY, JULY 26, 1924

EVEN COUNTRY LIFE MAY HAVE SHORTCOMINGS

On every side, one may hear the slogan, "Give Nature a chance," particularly when a somewhat obscure malady or even one of the familiar disorders with undetermined causation presents the problem of restoring health. He would, indeed, be a dull student of the human organism and a blinded observer of its functions who failed to recognize the potent recuperative powers represented by the *vis medicatrix naturae*. Sometimes Nature, as manifested in our daily environment, performs wonderful cures; witness the beneficent virtues of sunlight and outdoors in the healing of rickets or the relief of certain forms of tuberculosis. Sometimes, on the other hand, it is the natural defenses of man himself—his phagocytes, his antitoxins, his metabolic and excretory functions, his inherent cellular growth propensities—that bring about the much desired escape from bodily menaces. The growing appreciation of these helps to health, which may usually be secured without cost and for the mere asking, sometimes lead to a false sense of security, or at any rate a distorted estimate of remedial values in the one or the other class of Nature's helps. The wealth of fresh air and sunshine, the relative abundance of wholesome food and the boundless opportunities for exercise in the open that country life affords are not always a guarantee against the inroad of subtle menaces. Malnutrition and under-size among school children are not unknown in the rural districts. Goiter may make an insidious entrance into such communities, despite the apparent beneficence of Nature's gifts.

By way of illustration may be cited the outcome of a recent goiter survey in some of the counties of Michigan, one in the Upper Peninsula, one in the upper part of the Lower Peninsula, and two in the central part of the state. These counties were selected because two of them were known to have little or no iodine in their water supply, and in two the iodine content is the highest of any section in the state, though much less than that in the waters of nongoitrous areas of the United States.

Among more than 2,000 children examined in one of smaller cities, thyroid enlargement was found to present in 50 per cent. In the rural and village schools outside this city, but in the same county, 62 per cent of the children were found with thyroid enlargement 54 per cent. of the boys and 71 per cent. of the girls. It was noted that the water supply of the city of Cadillac shows a very slight trace of iodine, whereas no iodine was found in the water in the rural districts of the county. This is only one of a series of illustrative system surveys that have led government investigators¹ to point out that the average city dweller probably has more opportunities to secure iodine in his food supply than has the rural dweller, the food supply of the former being shipped in, to a greater or less extent, therefore being somewhat more varied than that of the rural dweller. Sea foods, ordinarily only infrequently supplied to rural districts, are more common in the markets of the city. Another possible factor mentioned is that medical treatment is more generally available in the city than in the country. Even the oft-berated physician can sometimes supplement the good work of fresh air and sunshine.

It is a wholesome sign that the authorities responsible for health in the states and nation are awakening to the goiter situation in this country. The efforts of the state of Michigan, as recently reported by Olin,² indicate the needs and the possibilities presented by the goiter areas. It would be advantageous if the normal sources of iodine for the population in nonaffected districts could be accurately ascertained. McClendon, after examining numerous specimens of water from various sections of the United States, and tabulating the results of various goiter surveys that had been made, stated that it was his belief that the amount of simple goiter in the United States varied inversely with the amount of available iodine in the food supply of the areas. His figures were so meager, and the areas of the country covered so large, that it was decided to choose the areas of Michigan to be surveyed for goiter only after a preliminary water survey for the iodine content had been made. Such figures as already have been published from Michigan indicate wide variations in the iodine content of the potable waters, in correspondence with the incidence of goiter among the school population. The problem of the best mode of prevention is one that cannot be lightly passed over. It has been proposed to require by law that all salt sold for human and animal consumption in goitrous areas contain sufficient iodine so that the minimum requirements of 300 mg. a year would be normally taken in by every one in the area. Olin believes that supplying iodine deficiency through household necessity would eliminate virtually all administrative detail, would do away with the necessity

1. Goiter Survey in Wexford County, Michigan, Pub. Health 39: 663 (April 4) 1924.

2. Olin, R. M.: Iodine Deficiency and Prevalence of Simple Goiter in Michigan, J. A. M. A. 82: 1328 (April 26) 1924.

3. McClendon, J. F.: Simple Goiter as a Result of Iodine Deficiency, Preliminary Paper, Method of Determining Iodine, J. A. M. A. 80: 269 (March 3) 1923; Iodine and Prevention of Goiter, Science 56: 269, 1923.

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